

**Recommendation #249**

**Inadvertent Disposal of TRU Wastes in the E-Area Trenches**

**Background**

The U.S. Atomic Energy Commission (AEC) first identified transuranic (TRU) waste as a separate category of radioactive waste in 1970, and it was later defined by AEC in 1973 as waste containing greater than 10 nCi/g of TRU alpha-emitting radionuclides. Due to the hazards associated with the increased concentrations of long-lived alpha-emitting radionuclides, this waste warranted more stringent handling and disposal considerations than low-level waste (LLW). Before 1970, the same waste, known as “alpha waste” then, was handled in a manner similar to LLW and was generally disposed of by shallow land burial or other similar disposal techniques. The Department of Energy (DOE) revised the definition of TRU waste in 1982, increasing the lower limit of TRU alpha-emitting radionuclides with half-lives greater than 20 years from 10 to 100 nCi/g. Around this same time period, the U.S. Nuclear Regulatory Commission (NRC) revised its classification of LLW, specifically noting that LLW containing more than 100 nCi/g of TRU radionuclides was not suitable for disposal by shallow land burial.

The Waste Isolation Pilot Plant (WIPP) located deep within underground salt deposits near Carlsbad, New Mexico, has been developed as the national repository for DOE TRU waste. However, DOE Orders do allow disposal by other means in other locations, if certain regulatory requirements are met. The E-Area LLW Facility was never intended to be used for disposal of TRU Waste. However, in June 2007, while characterizing waste containers for disposal in E-Area, the Savannah River Site (SRS) Engineering staff noticed the lack of handwritten Burial Ground Note information in the TRU Waste electronic database used in the 1980’s. Data entries to the electronic database, made in the early 1980’s did not include several handwritten notes which indicated that some TRU waste was included in five containers. Thus, a suspected quantity of transuranic isotopes that would be today classified as TRU waste was inadvertently disposed of in the E-Area slit trenches in 2003.

This was self-reported to the appropriate DOE channels so that corrective actions and evaluations could be taken. A courtesy notification was also made to the South Carolina Department of Health and Environmental Control (SCDHEC) and the Environmental Protection Agency (EPA). An evaluation of the Radiological Performance Assessment (PA) Limits for the E-Area slit trenches confirmed that the inadvertent disposal of TRU waste does not pose an immediate or long-term threat to human health or the environment because the disposed waste isotopic content is well within conservative PA limits established to assure protectiveness. In addition, DOE was able to confirm compliance with DOE Order 435.1 (Radioactive Waste Management) and the Disposal Authorization Statement issued under the requirements of such Order. Possible corrective actions currently under review by DOE are TRU waste container retrieval versus disposal in place. Programmatic and self-assessment actions to prevent recurrence have also been implemented (Ref. 1).

**Comment**

After reviewing the conclusions of the Old Radioactive Waste Burial Ground Focus Groups in 2001, the SRS Citizens Advisory Board’s (CAB) position was to oppose retrieval of alpha buried wastes from the Old Radioactive Waste Burial Ground (ORWBG) (Ref. 2). This opposition centered on the fact that any attempt to exhume the waste would be too dangerous to site workers and the

environment and cost prohibitive. Furthermore, such an excavation would also create an additional large volume of a secondary waste stream requiring disposition (Ref. 3). The rationale that supports that position also informs this similar situation of inadvertent disposal of some TRU wastes.

In this case (the inadvertent TRU waste disposition in E-Area trenches), the SRS CAB recognizes the limited quantity of waste that would require retrieval and the relatively insignificant and minimal impact of the additional radionuclides to the E-Area PA limits. In addition, the actual quantity of transuranic isotopes in the waste is suspect due to the limited analytical technology at the time of generation and the use of conservative engineering knowledge to estimate TRU concentrations in waste; therefore, the actual classification of the waste (as TRU with concentrations greater than 100 nCi/g) is questionable. The waste under consideration in this current action may actually be better contained and exhibits lower risk than that disposed of between 1955 and 1970 in the ORWBG.

Before the SRS CAB could support any corrective action option related to the inadvertent TRU waste disposal, the SRS CAB needs additional information related to the risks, costs, safety, and environmental impacts of both the retrieval option and the disposal in place option.

### **Recommendation**

Before a final decision is made by DOE on which option (retrieval vs. disposal in place) will be implemented, the SRS CAB requests the following on or before November 16, 2007:

1. DOE-SR conduct a thorough evaluation of the risks, costs, safety, and environmental impacts associated with both options, justify how each option meets DOE orders and regulations, demonstrate how each option is protective of the public and the environment, and share the results with the SRS CAB.
2. DOE-SR identify the results from the Root Cause Analysis and the necessary corrective actions they will take to prevent the recurrence of any future inadvertent TRU waste disposals and share these results with the SRS CAB.

### **References**

1. TRU Waste Inadvertently Dispositioned in LLW Slit Trenches presentation to the Waste Management Committee by Howard Pope, DOE-SR and Sonny Goldston, WSRC, August 21, 2007.
2. Citizens Advisory Board Recommendation No. 226 (adopted January 25, 2006), "Proposed National Policy on Buried Alpha Waste".
3. "Long Range Analysis of the Need for Cleanup and Closure of the Old Radioactive Waste Burial Ground – Human Health Risk Analysis", prepared by the Old Radioactive Waste Burial Ground SRS CAB Focus Group, July 2001